

Reference

**Tektronix**



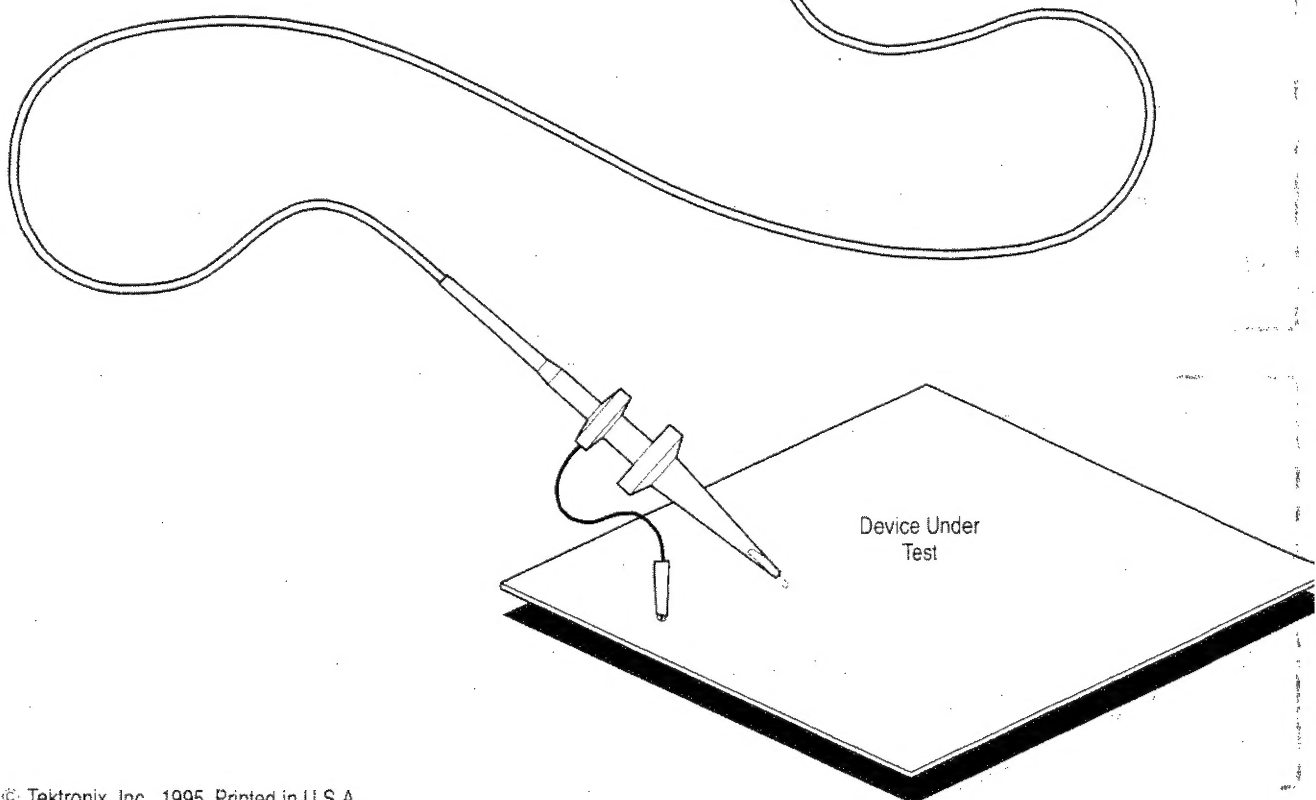
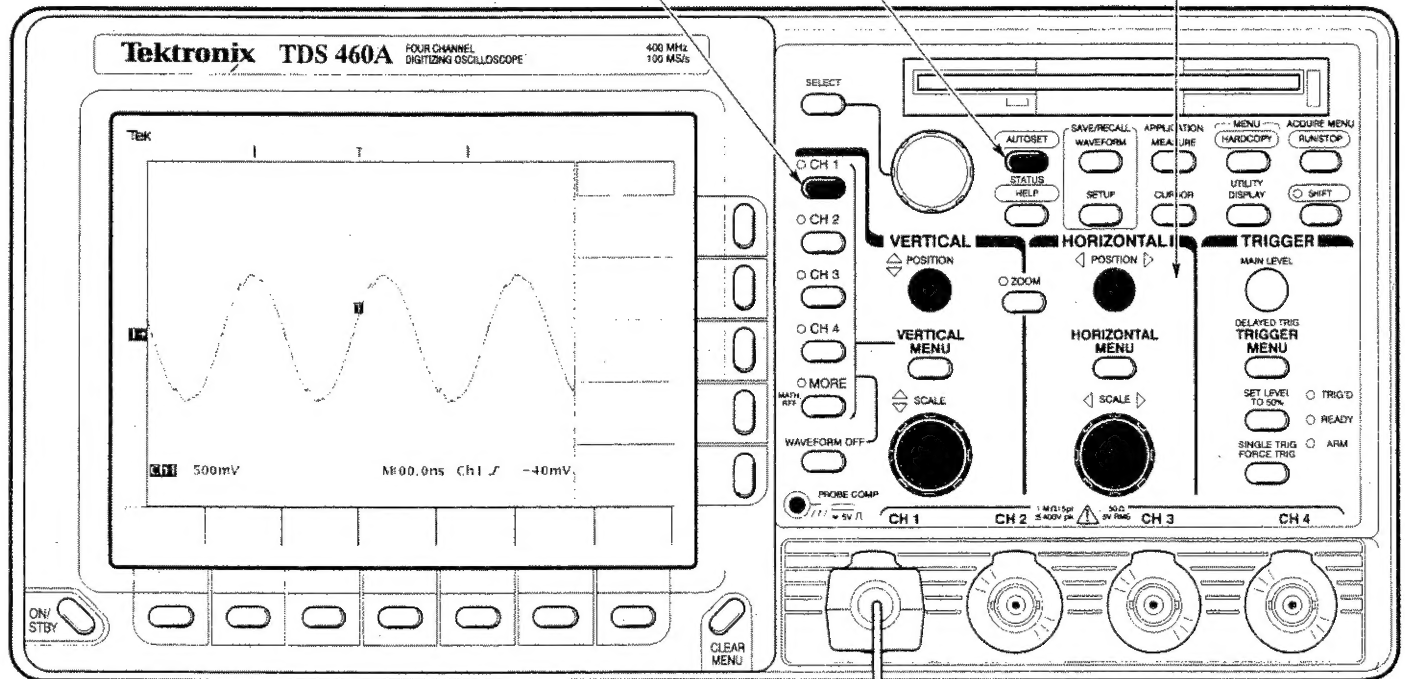
**TDS 410A, TDS 420A & TDS 460A**  
**Digitizing Oscilloscopes**

**070-9220-00**



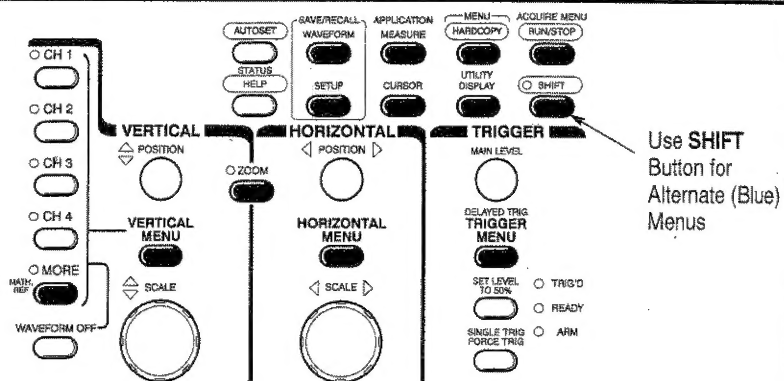
# To Display a Waveform:

- 1 Attach a probe to CH 1 and hook it up to your signal.
- 2 Press CH 1 button.
- 3 Press AUTOSET.
- 4 Adjust VERTICAL and HORIZONTAL POSITION and SCALE as desired.

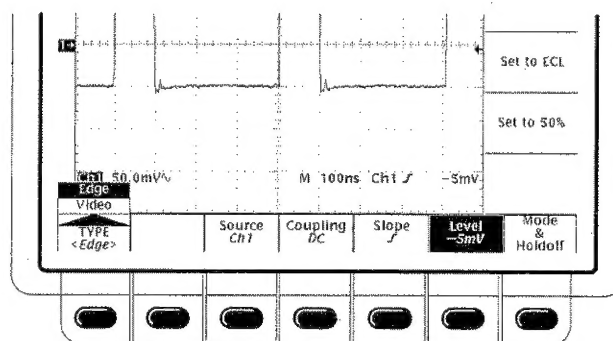


# To Set Up Using a Menu:

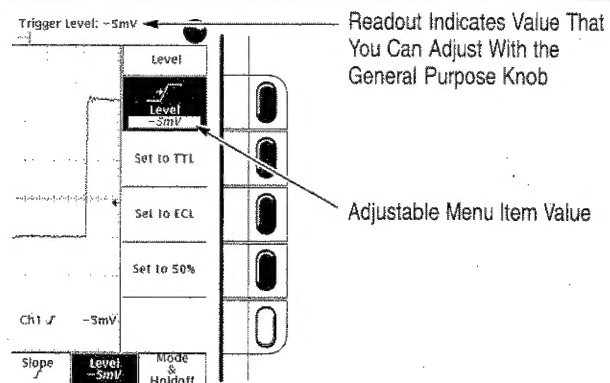
- 1 Press any of the front panel menu buttons.



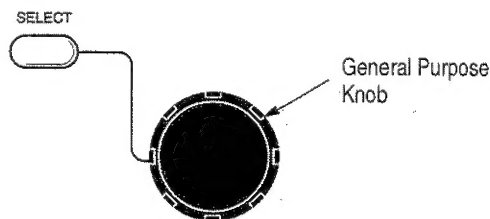
- 2 Select an item from the main (bottom) menu.



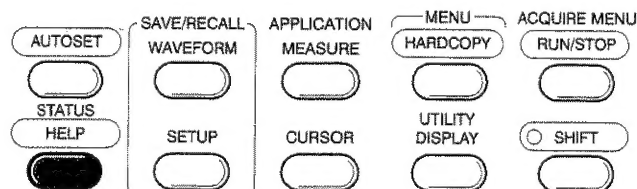
- 3 Select any displayed item from the side menu.



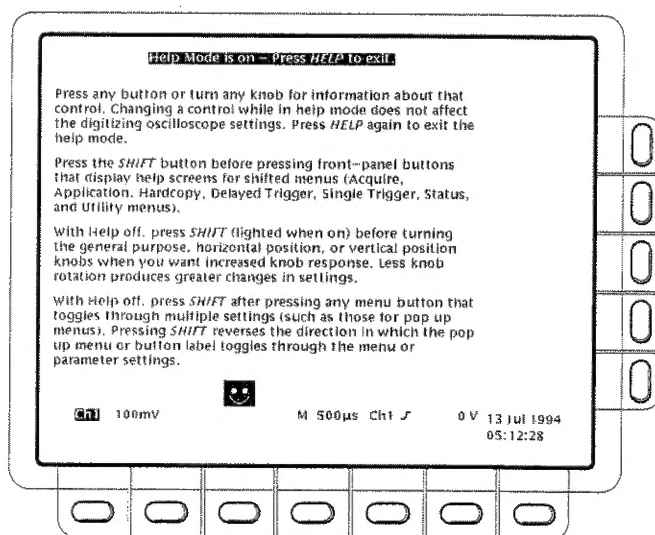
- 4 Adjust menu item values using the general purpose knob.



# To Display Help On Screen:

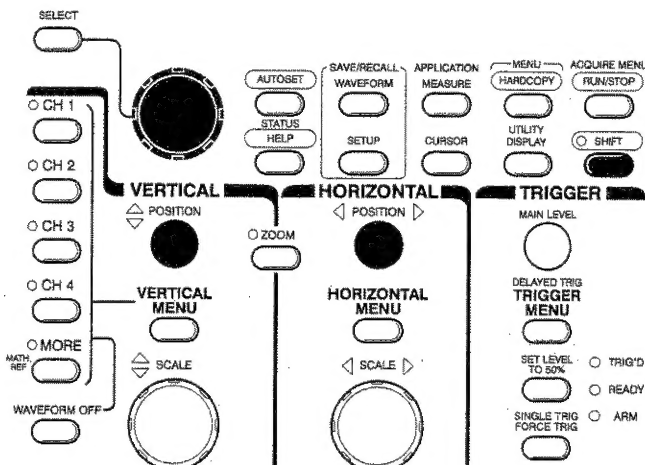


- 1 Press the **HELP** button.



- 2 Now turn any knob or press any button and read a description of it on the display. Press the **HELP** button again to exit help.

# To Speed Up Knob Adjustments:



Press the **SHIFT** button to change the rate of the **VERTICAL** and **HORIZONTAL POSITION** knobs and the general purpose knob.

# To Select a Trigger:

TRIGGER

MAIN LEVEL

DELAYED TRIG

TRIGGER

MENU

SET LEVEL

TO 50%

○ TRIG'D

○ READY

○ ARM

SINGLE TRIG

FORCE TRIG

1

Press the TRIGGER MENU button.

This Symbol

Indicates

Pop-Up Menu

Set to 50%

50.0mV/div

100ns

Ch1

-5mV

TYPE

<Edge>

Source

ch1

Coupling

DC

Slope

↑

Level

-5mV

Mode

& Holdoff

2

Select trigger type or parameter from main menu.

TRIGGER

MAIN LEVEL

DELAYED TRIG

TRIGGER

MENU

SET LEVEL

TO 50%

○ TRIG'D

○ READY

○ ARM

SINGLE TRIG

FORCE TRIG

3

Set TRIGGER LEVEL (Edge Trigger Only).

TYPE <Edge>		TYPE <Video>	
Coupling	Slope	Video Class	Sync Polarity
DC DC	Positive	NTSC	Negative
AC AC	Negative	PAL	Positive
HF Reject		SECAM	
LF Reject		Custom	
Noise Rej (DC Low Sensitivity)			

Tek Run: 500MS/s ET Sample

Trigger Level: -5mV

Level

-5mV

Set to TTL

Set to TCL

Set to 50%

50.0mV/div

100ms

Ch1

-5mV

TYPE

<Edge>

Source

ch1

Coupling

DC

Slope

↑

Level

-5mV

Mode

& Holdoff

"T" Shows Trigger Position

Press to Display Pop-Ups

Press Again to Make Selection

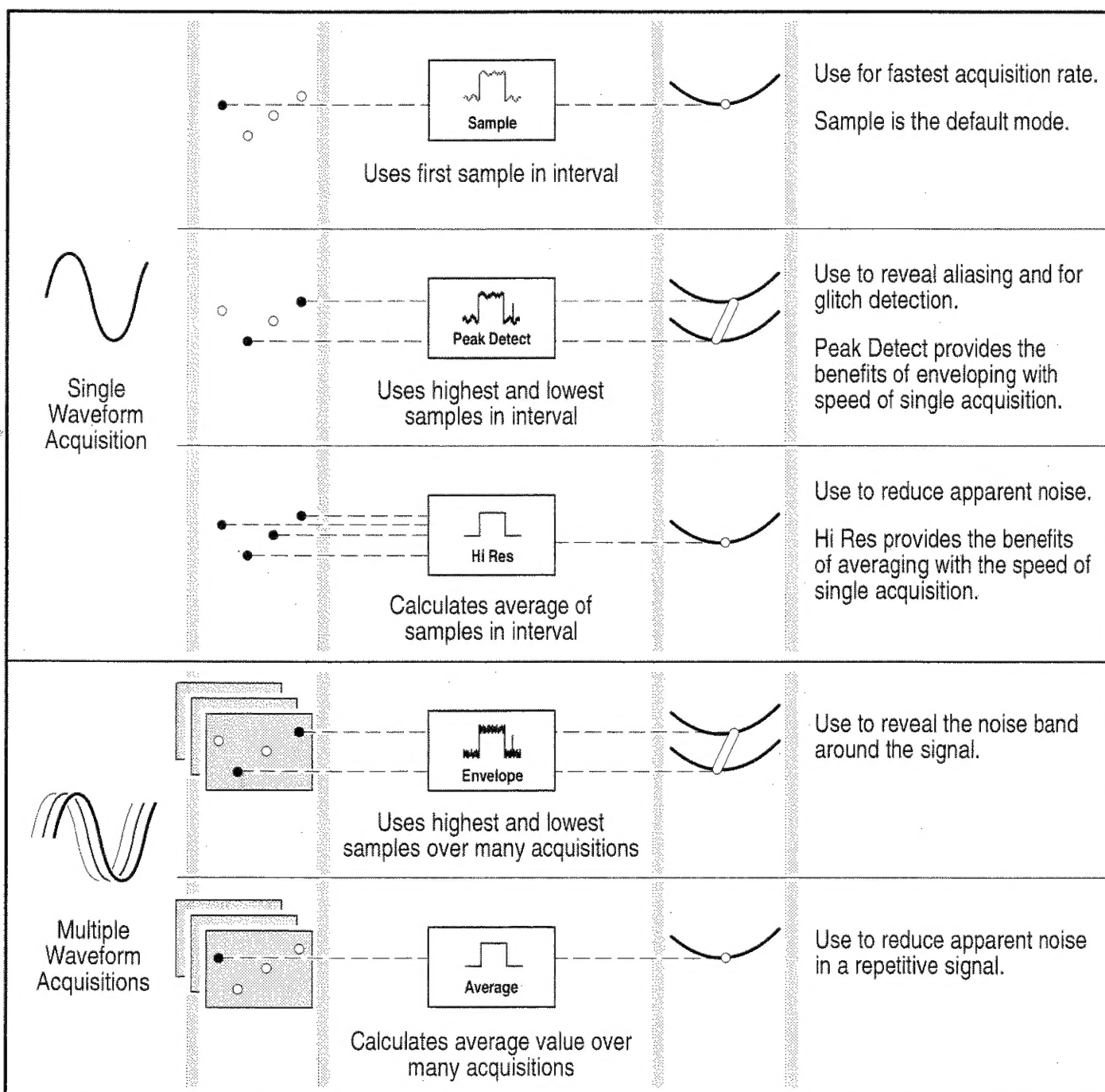
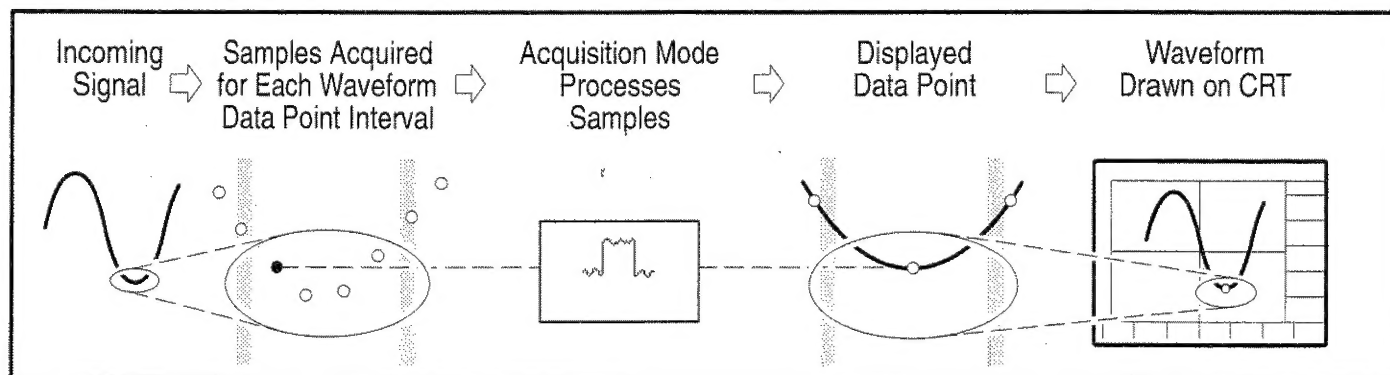
A Pop-Up Selection Changes the Other Main Menu Items

Title of Side Menu

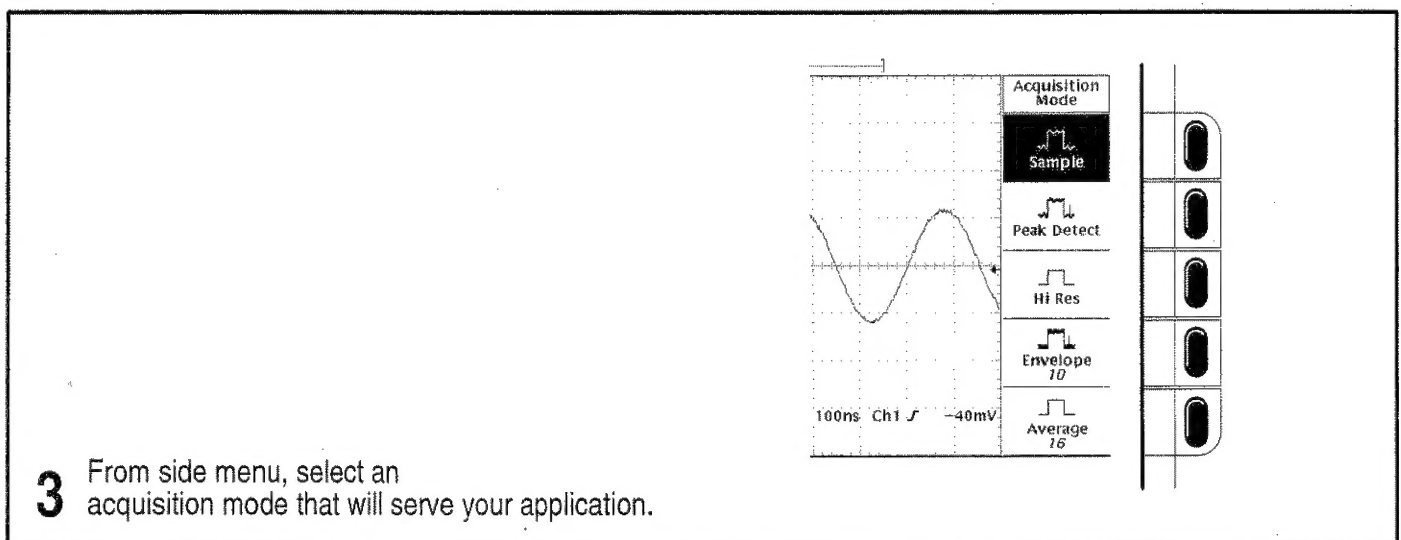
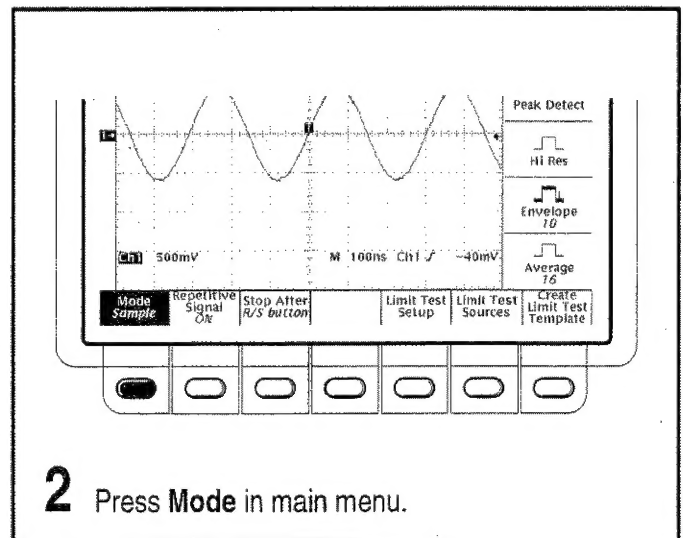
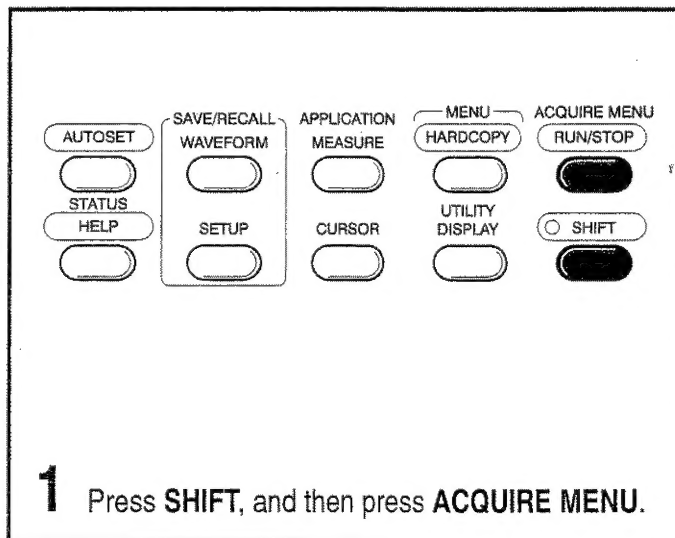
Arrow Shows Trigger Level

Removes Menus From Screen

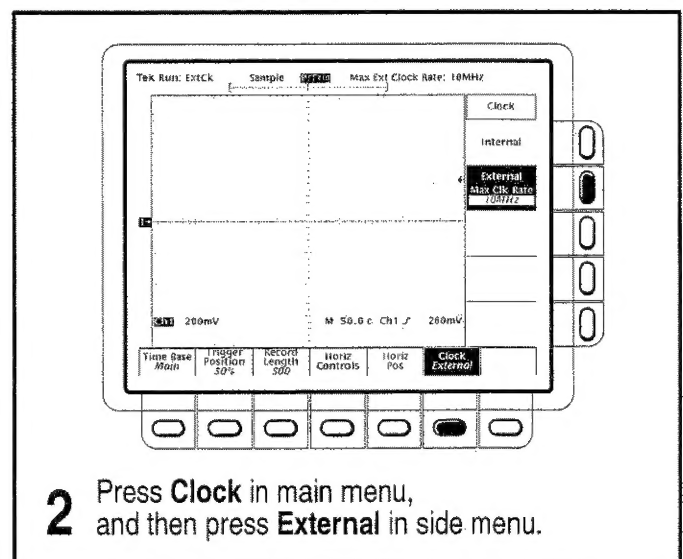
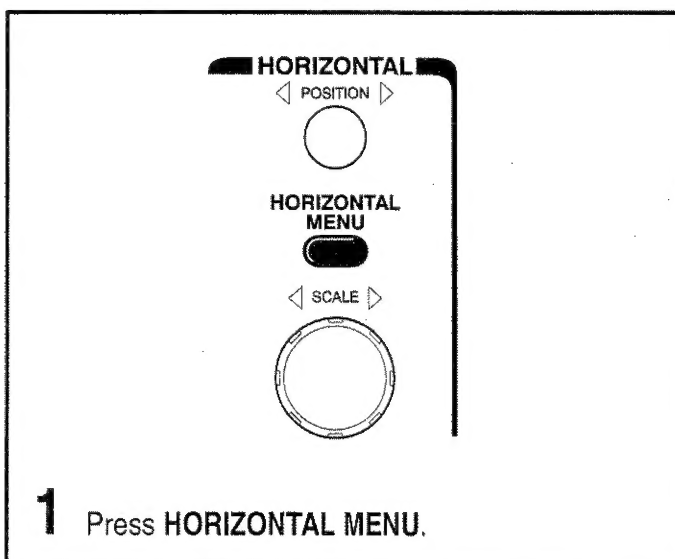
# How the Acquisition Modes Work:



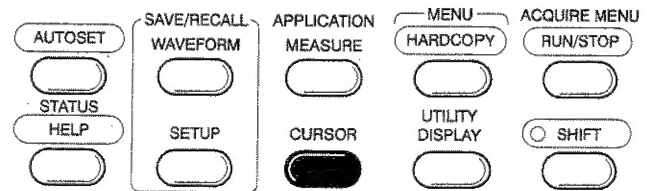
## To Choose an Acquisition Mode:



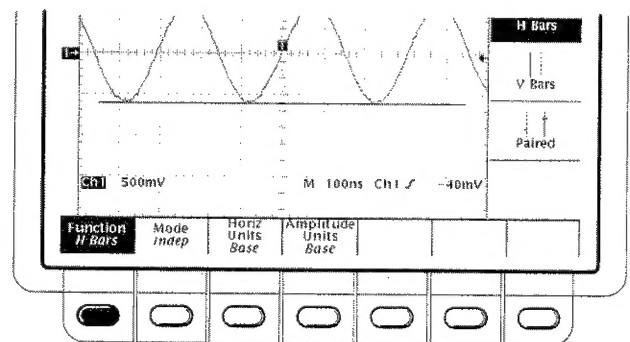
## To Use External Clock:



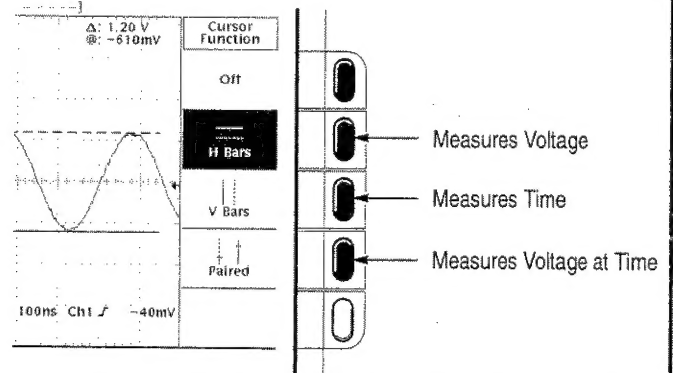
# To Take Measurements With Cursors:



**1** Press **CURSOR** button.



**2** Press **Function** in the main menu.

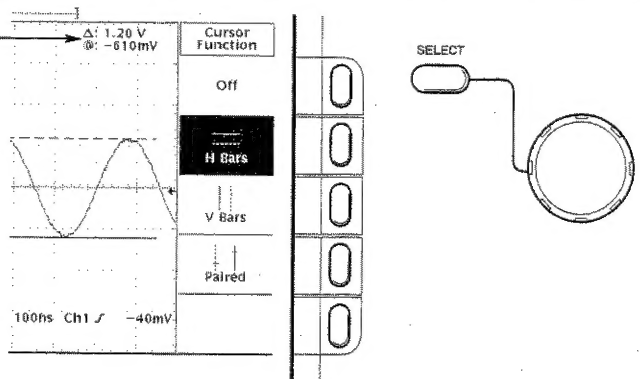


**3** Select from the side menu.

$\Delta$  Difference Between Cursors in Volts (Horizontal Bars) or Time (Vertical Bars)

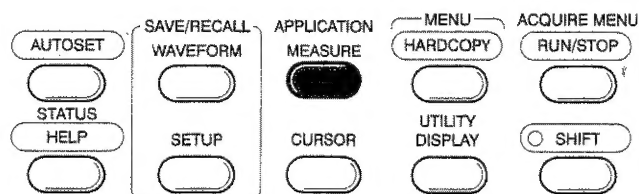
@ Position of Active Cursor Relative to Ground (Horizontal Bars) or Trigger (Vertical Bars)

**4** Move cursor with the general purpose knob.  
Press **SELECT** to switch between cursors.  
Press **SHIFT** to speed up/slow down cursor movement.

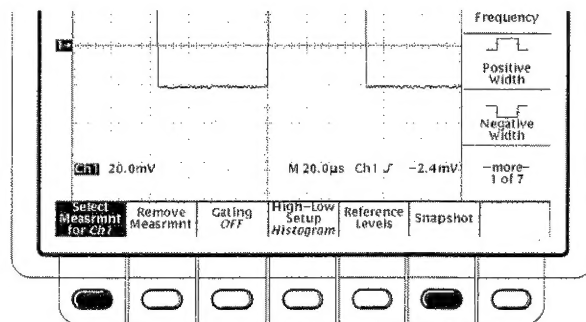




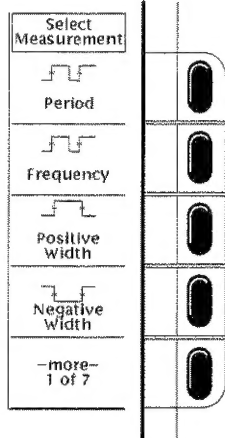
# To Take Measurements Automatically:



**1** Press the **MEASURE** button.



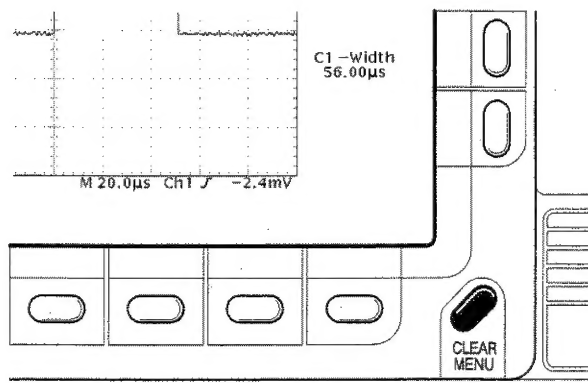
**2** Press **Select Measrmnt** or **Snapshot** in main menu.



**3** Select up to four measurements.

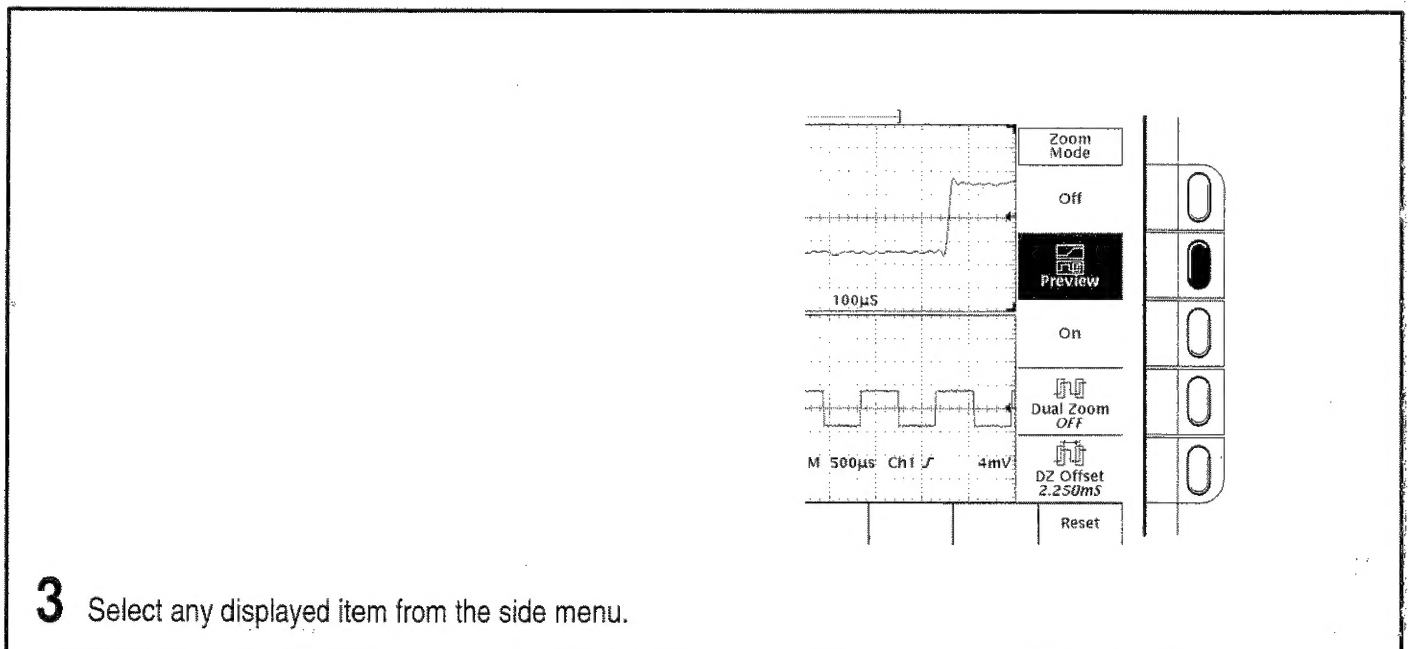
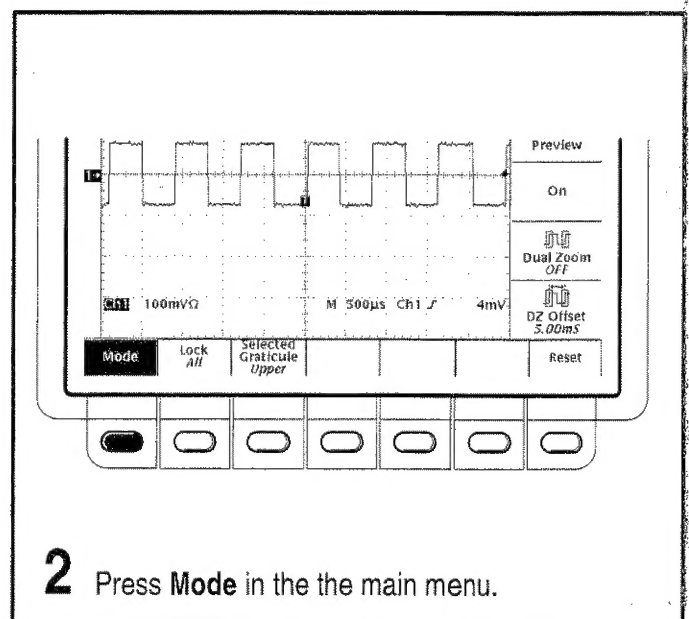
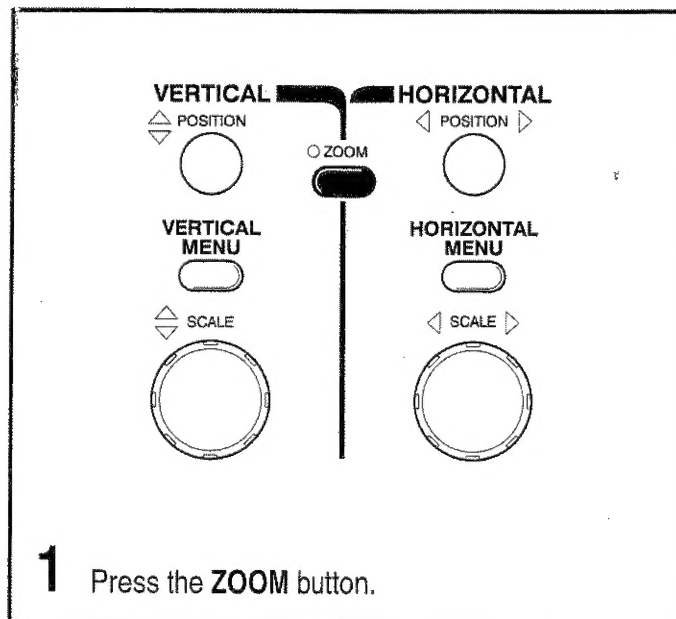
## Automated Measurement Selections

Select Measurement						
Period	Rise Time	Delay	High	Pk-Pk	Mean	Area
Frequency	Fall Time	Phase	Low	Amplitude	Cycle Mean	Cycle Area
Positive Width	Positive Duty Cycle	Burst Width	Max	Positive Overshoot	RMS	-more- 7 of 7
Negative Width	Negative Duty Cycle		Min	Negative Overshoot	Cycle RMS	To 1 of 7
-more- 1 of 7	-more- 2 of 7	-more- 3 of 7	-more- 4 of 7	-more- 5 of 7	-more- 6 of 7	



**4** Press the **CLEAR MENU** button to move measurement readouts away from graticule.

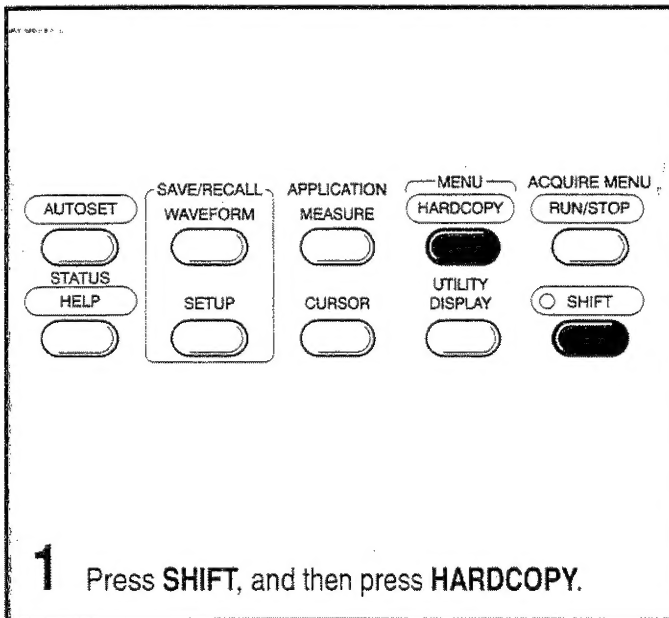
# To Zoom a Waveform:



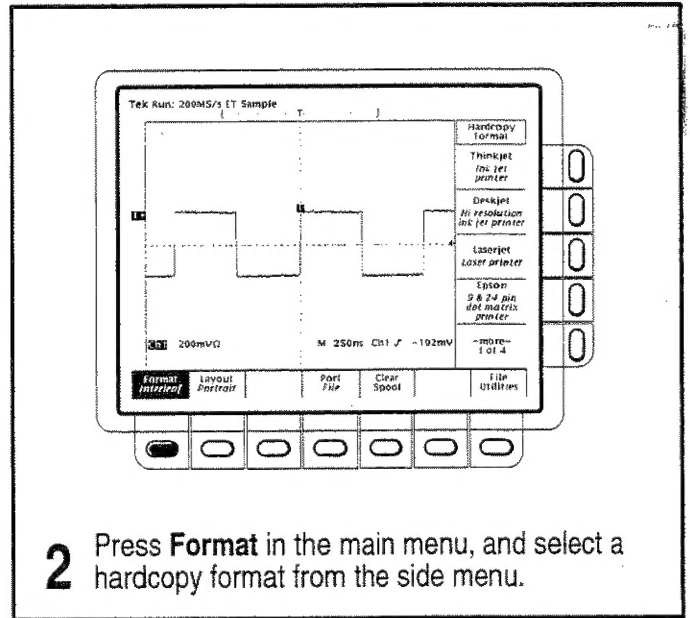
## To Perform Other Zoom Operations:

- Turn the Vertical and Horizontal **SCALE** and **POSITION** knobs to adjust the scale and position factors of the acquisition or the zoomed waveforms.
- Press **Lock**, and then use the menu buttons to choose which waveform group to zoom horizontally.
- Press **Selected Graticule**, and use the menu buttons to direct the scale and position knobs to the upper (zoomed waveforms) or lower (acquisition waveforms) graticule in **Dual Zoom** or **Zoom Preview** modes.
- Press **Reset**, and press the **Reset All Factors** or **Reset Live Factors** menu buttons to reset the zoom factors.

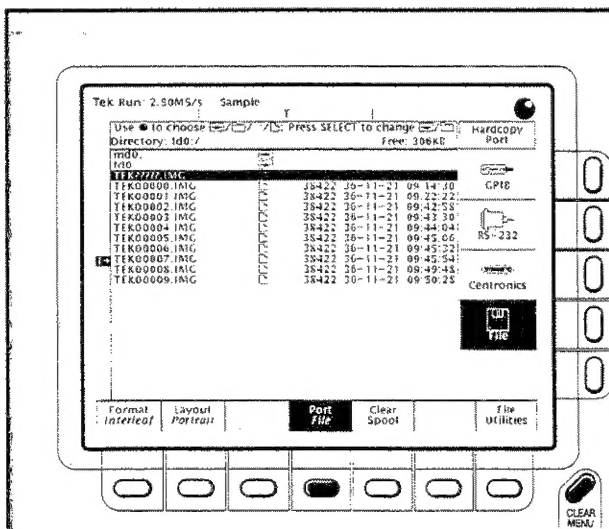
# To Save a Hardcopy to the File System:



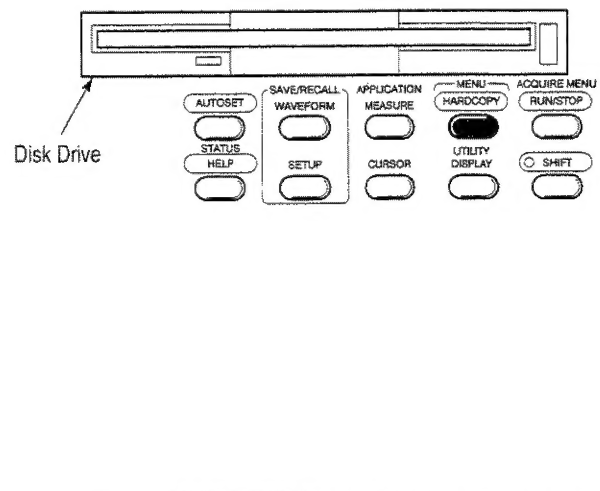
**1** Press **SHIFT**, and then press **HARDCOPY**.



**2** Press **Format** in the main menu, and select a hardcopy format from the side menu.



**3** Press **Port** in the main menu, press **File** in the side menu, and then press **CLEAR MENU**.



**4** Press **HARDCOPY** anytime to save a copy of the current screen to a unique file in the oscilloscope file system.

## To Perform Other File System Operations:

- Press **SAVE/RECALL WAVEFORM**, and use the menu buttons to save a waveform to a file or recall it from a file.
- Press **SAVE/RECALL SETUP**, and use the menu buttons to save a setup to a file or recall it from a file.
- Press **File Utilities** in the Save/Recall Waveform, Save/Recall Setup, or Hardcopy menus to access utilities that create directories, copy files, and do other operations in the oscilloscope file system.